

WHAT IS CLAIMED IS:

1. A liquid discharging head comprising:  
a pair of substrates connected in a laminated state;  
a plurality of liquid channels formed on a connected surface of one of said pair of substrates;

a plurality of driving elements, each formed at a predetermined position above a corresponding one of said plurality of liquid channels; and  
orifices, each communicating with a distal end of a corresponding one of said plurality of liquid channels,

wherein a liquid is discharged from each of said orifices by an operation of a corresponding one of said plurality of driving elements, and

wherein a face surface, serving as an outer surface of a member including said orifices is coated with a material having an ultrahigh water-repellent property.

2. A liquid discharging head according to Claim 1, wherein each of said plurality of driving elements is a heating element for generating thermal energy, and wherein the liquid within each of said plurality of liquid channels is boiled by a corresponding one of said heating elements to generate a bubble in the liquid, and the liquid is discharged from a corresponding one of said orifices due to a pressure generated during the generation of the bubble.

3. A liquid discharging head according to Claim 1, wherein a contact angle made by the material having the ultrahigh water-repellent property and the liquid is at least 150 degrees.

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4. A liquid discharging head according to Claim 1, wherein the material having the ultrahigh water-repellent property contains fluoroalkylmethoxysilane.

5. A liquid discharging apparatus comprising a liquid discharging head according to any one of Claims 1 through 4.

6. A liquid discharging apparatus comprising a liquid discharging head according to any one of Claims 1 through 4, and a cleaning member for removing contamination adhering to the face surface, serving as the outer surface of the member where said orifices are formed.

7. A liquid discharging apparatus according to Claim 6, wherein said cleaning member comprises a polyurethane rubber elastic member, and wherein a water-repellent film is formed on a surface of said cleaning member contacting the face surface.

8. A liquid discharging head comprising:  
discharging ports for discharging a liquid;  
liquid channels communicating with corresponding ones of said discharging ports;  
heating elements, each formed at a predetermined position above a corresponding one of said liquid channels; and  
a supply port for supplying said liquid channels with the liquid,  
wherein the liquid within each of said liquid channels is boiled by a

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corresponding one of said heating elements to generate a bubble, and the liquid is discharged from a corresponding one of said discharging ports due to a pressure generated during the generation of the bubble, and

wherein a face surface, serving as an outer surface of a member for forming said discharging ports, is coated with a material having an ultrahigh water-repellent property.

9. A liquid discharging head according to Claim 8, wherein a contact angle made by the material having the ultrahigh water-repellent property and the liquid is at least 150 degrees.

10. A liquid discharging head according to Claim 8, wherein the material having the ultrahigh water-repellent property contains fluoroalkylmethoxysilane.

11. A liquid discharging apparatus comprising a liquid discharging head according to any one of Claims 8 through 10.

12. A liquid discharging apparatus comprising a liquid discharging head according to any one of Claims 8 through 10, and a cleaning member for removing contamination adhering to the face surface, serving as the outer surface of the member where said discharging ports are formed.

13. A liquid discharging apparatus according to Claim 12, wherein said cleaning member comprises a polyurethane rubber elastic member, and wherein a water-repellent film is formed on a surface of said cleaning

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member contacting the face surface.

14. A method for manufacturing a liquid discharging head, said method comprising the steps of:

forming a plurality of driving elements on a surface of at least one of a pair of substrates;

forming a plurality of liquid channels so as to correspond to the plurality of driving elements;

connecting the pair of substrates so as to provide a laminated state in which a surface where the plurality of liquid channels are formed is a connecting surface;

forming a member for forming orifices at a distal end of a connected substrate;

coating a face surface, serving as an outer surface of the member, with a material having an ultrahigh water-repellent property; and

causing the orifices to communicate with corresponding ones of the liquid channels.

15. A method for manufacturing a liquid discharging head, said method comprising the steps of:

forming an element substrate made of silicon on a surface of at least one of a pair of substrates;

forming a plurality of heating elements for generating thermal energy on the element substrate;

forming a plurality of liquid channels corresponding to the plurality of heating elements;

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connecting the pair of substrates so as to provide a laminated state in which a surface where the plurality of liquid channels are formed is a connecting surface;

forming a member for forming orifices at a distal end of a connected substrate;

coating a face surface, serving as an outer surface of the member, with a material having an ultrahigh water-repellent property; and

causing the orifices to communicate with corresponding ones of the liquid channels.

16. A method for manufacturing a liquid discharging head, said method comprising the steps of:

forming heating elements for generating thermal energy on an element substrate made of silicon;

forming liquid channels corresponding to the heating elements;

forming a supply port for supplying the liquid channels with a liquid;

forming a member where discharging ports for discharging the liquid are formed;

coating the member with a material having an ultrahigh water-repellent property; and

forming the discharging ports in the coated member.

17. A method according to any one of Claims 14 through 16, wherein the coating is performed according to a film forming method using a chemical vapor reaction or a radical polymerization reaction.

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18. A method according to any one of Claims 14 through 17, wherein heat treatment at 150 C is performed after said coating step.

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